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## ABSTRACT

This paper discusses and demonstrates the use of Vygotskian psycholinguistic theory in creating lexical translations and exemplifying sentences for a bilingual dictionary. The dictionary is a Japanese-English scientific and technical reference. The use of one Vygotskian concept, definition of situation, relies on the users' expectations, given their scientific and technical training. A second concept, intersubjectivity, concerns the nature of the Japanese scientists' interdependence in lexical usage, which can be used by the dictionary editors when eliding portions or trimming the lexical examples. Finally, when dictionary users seek words, they seek control, a third Vygotskian concept divided into object-, other-, and self-regulation. In addition, a psycholinguistic shift for dictionary users from intra- to interpsychological planes is hypothesized. (Author/MSE)

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### Vygotskian Theory Applied to Japanese-English Lexicography

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### Abstract

#### Vygotskian Theory Applied to Japanese - English Lexicography

Key words: lexicography, Japanese, Vygotsky

Vygotskian notions are employed in this theoretical paper, to create a basis for lexical translations and exemplifying sentences in a Japanese to English dictionary, the *Japanese-English Scientific and Technical Dictionary* (Tokyo:OHM, Ltd. 1988). Employment of a primary Vygotskian concept, definition of situation, relies on the user's expectations given his scientific and technical training. A second Vygotskian concept, intersubjectivity (Rommetsveit, 1974), concerns the nature of the Japanese scientists interdependence in lexical usage which can be used by the editors when eliding portions or 'trimming' the lexical examples. Finally, when dictionary users seek words, they seek control, a third Vygotskian concept which is divided by Vygotskyans into object-, other-, and self-regulation. Definition of situation, intersubjectivity, the three types of control, and a hypothesized psycholinguistic shift for the dictionary user from intra- to interpsychological planes will be explained.

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## Vygotskian Theory Applied to Japanese-English Lexicography

### Introduction

In this theoretical paper, Vygotskian notions are employed to create a basis for lexical translations and their example sentences in a Japanese to English dictionary, the soon to be published *Japanese-English Scientific and Technical Dictionary* (Tokyo:OHM, Ltd.) on which the author worked on a 5079 page galley proof as the English editor.

The editorial employment of a primary Vygotskian concept, definition of situation, relies on the user's expectations given his scientific and technical training. A second Vygotskian concept, intersubjectivity (Rommetveit, 1974), concerns the nature of the Japanese scientists interdependence in lexical usage which can be used by the editors when eliding portions or 'trimming' the lexical examples. Finally, when dictionary users seek words, they seek control, a third Vygotskian concept which is divided by Vygotskyans into object-, other-, and self-regulation (Zivin, 1979). While striving for the highest level, self-regulation, many foreign users, including Japanese scientists, engineers, and technicians, settle for the most elementary level, object-regulation, with a poorly translated result. Other-regulation, the ability to control others with words, is also degraded to object-regulation when the words themselves become the focus of the user's thought.

This research paper introduces this Vygotskian perspective with analyses of numerous examples from the initial word stock and its subsequent revisions. Definition of situation, intersubjectivity, the three types of control, and a hypothesized psycholinguistic shift for the dictionary user from intra- to interpsychological planes will be explained and discussed. Vygotskian theory can be explanatory for lexicographers and lexicologists since bilingual dictionaries and their objectives reflect language use as a social derivative (Vygotsky, 1986). When we apply this theory to lexicography, we find that it can provide a theoretical basis for this field of applied linguistics.

Bilingual lexicography is the work of writing or compiling a dictionary which defines words in one language with words in another language. In the above dictionary this particular type is termed 'active' (Kromann, Riiber, Rosbach, 1984: 208), according to the Ščerba concept. An active dictionary is one in which the gloss is in the second language, the less well understood language of the user. This Japanese-English dictionary intended for Japanese users is just such a dictionary. The editors of an active dictionary have a responsibility to their readers to choose the glosses most frequent and most applicable and to choose the example sentences which are the most transparent for the second language learners and users. If the glosses and examples tax the learners knowledge of English too much the end effect could be a poor translation and miscommunication.

For example, one possible scenario could easily be the Japanese chemical engineer who

wants to translate his Japanese sentence which would read, 'the two plastics' liquification points seemed to be suited to each other' if it were translated correctly. He finds the head word in the dictionary, *au*, 合う, defined as, 'fit, match, adapt, suit, be suited,' with four sentences illustrating 'fit' and one each for 'match' and 'adapt' (galley proof, p. 9). One of the example sentences for 'fit' reads, 'A Kaplan turbine is a propeller turbine with movable blades whose pitch can be adjusted to fit existing operating conditions.' Based on this sentence which has a phrase, 'operating conditions,' seemingly analogous to his 'liquification points,' he chooses 'fit.' His sentence then reads, 'the two plastics' liquification points seemed to fit each other,' which is not the best possible translation.

In order to serve the readers of an active dictionary, in which the readers cannot depend on their native speaker knowledge to interpret and understand the opaque elements in the glosses, the editors must strive to incorporate as much useful and clearly stated information as possible, without the project becoming encyclopedic. This contrasts greatly with the 'passive' dictionary (Kromann, Riiber, and Rosbach, 1984:208) which can depend on the user's knowledge to enable him to reinterpret the gloss for his own needs. Thus, English-Japanese dictionaries used by the Japanese when reading English are classified as 'passive,' while Japanese-English dictionaries used by the Japanese when writing (or even speaking!) English are classified as 'active.' Considerable effort is involved in the construction of either dictionary, but the construction and compilation of the active dictionary requires a particularly conscientious and determined effort. This effort can take years.

### Background

The *Japanese - English Scientific and Technical Dictionary* had its beginnings twenty-five years ago when an electrical engineer began to translate English electronic reports for his company and to translate some Japanese materials into English. In order to more efficiently do this, he began collecting examples of certain standard language and idiomatic phrases in electronics technical writing first as part of his job, and later as a hobby. Still later, he became a translator and technical English professor and began compiling examples in earnest. After twenty years, he had accumulated some thirty thousand example sentences from American and British books, reports, journals, magazines, and newspapers. From 1980 to 1985, he enlisted his technical English students in the endeavor when he realized the importance of his project. These students, largely electronic engineers, metallurgical engineers, and railway engineers, added examples from their respective fields to enlarge the stock of examples. They also helped order the definitions according to frequency in the literature and helped choose the most appropriate sentences to illustrate each gloss. As for the format, each head word is given in *hiragana*, ordered by the *gojunhyo*, the fifty sound chart of the syllabary, and is followed by the Chinese *kanji*, all the English glosses, and then by the glosses one by one with at least one English sentence and its Japanese translation for each gloss. No etymology or pronunciation is included for space and size considerations.

As we can see from the chemical engineer's use of 'fit' above, some potential for error exists even though a great deal of conscientious effort was put into this dictionary. By the fall of 1985, a need for native speaker editing and proofreading was viewed as necessary. The general editor believed that Americans in the U.S. would be best since English speakers in Japan are often corrupted in their article usage as well as making other syntactic and semantic changes unthought of in the mother country. The proofing and editing was needed since the Japanese engineers who

assisted the general editor occasionally miscopied from the source literature, sometimes leaving out a word or two or skipping an entire line. More seriously, they frequently chose questionable examples for the first illustration of a gloss. For example, for *shuyo*, 主 要, the definition reads, 'chief, the chief disadvantage of this type of stripper...,' which would be cause for laughter for many readers of engineering reports.

Unfortunately, a sense of the unreal has pervaded lexicography, not to mention all language studies in Japan, since so few of the Japanese ever actually communicate with non-Japanese. Due to this non-communicative nature of English study, a non-communicative aura seems to surround many of the bilingual dictionaries published in Japan (McCreary, 1986). Head words and glosses seem to be only for translation into an artificial language for the teacher's eyes only. The Japanese regularly depends on his teacher to understand this variety of English, which has been termed 'Japlish.' As an example of Japlish in a major dictionary, we can turn to the definition of 'or' in a late 1970's Obunsha's English-Japanese dictionary. One of the example sentences amazingly asks, 'Is that a dog or a penguin?' To extend the realm of 'or' to those animals which can be readily distinguished was not the editors' intent; however, without any sense of communicative purpose behind the question, such a question can exist simply because it is grammatically correct. This focus on grammatical correctness at the expense of semantic and pragmatic naturalness is the bane of all who try to further English as a communicative tool in Japan.

### Galley proof error types

Following this brief introduction and background, let us turn to the galley proof of the dictionary and examine major errors in the glosses delineated into major types: lexical and semantic, syntactic, morphological, and spelling and printer's errors and their ramifications. Lexical and semantic includes word choice errors, onomatopoeia, and article usage; syntactic includes coordination and subordination, prepositions, and pronoun usage, and morphological includes plurals and possessives.

#### Lexical and Semantic

In addition to *shuyoo*, chief, exemplified above as a lexical error, we also have other lexical choice errors deriving from the assistants' lack of knowledge of English. For example, '*sampu suru*, 散布する, spray, The railroads took these prospective citizens and literally sprayed them over the land,' conjures up an image of the passenger cars suddenly ejecting their riders here and there across the continent. Perhaps a sentence from a technical manual or even an insecticide sprayer would have been more appropriate for this dictionary. Another example is '*kowasu*, 壊す, demolish, Demolish two three-story and basement and masonry and frame houses,' which sounds especially destructive and chaotic. Demolish used as a command seems a bit odd. A declarative sentence regarding the demolition of condemned buildings might have been more appropriate. An example recalling Obunsha's use of 'or' is '*shigoto*, 仕事, work, A man or a horse on the Moon could do the work of six men or six horses on the Earth.' The inclusion of horses seems to be a poor lexical choice. Semantic difficulties caused by trimming, a term for elision, are illustrated with, '*ni tsuide*, 次回, successively, With this device, sets of large color plates carrying multiple images may be made..., when the colors are printed successively, one over the other. Due to unfamiliarity with color lithography, many Japanese technicians may

incorrectly interpret this usage of 'successively,' although the inclusion of the elided clause might prevent such mistakes. Japanese is considered a comparatively ambiguous language and when Japanese write or speak English some of the ambiguity is transferred into their English. In this editor's opinion, the practice of trimming enhances the Japanese engineer's and scientist's tendency to be ambiguous. The unstated semantically ambiguous element should be left in, even if it results in a slightly larger and more expensive dictionary.

Turning now to the question of inclusion of and problems caused by onomatopoeia, let us note a few examples. These expressions, often reduplications, occur in blocks since the initial consonants are either the same or vary by a single letter. Thus, the proofreaders were often jolted to see these blocks of expressions consuming half a page or more every twenty to thirty pages in this technical dictionary. Under the 'ji' section, 'ji-ji', ジー-ジー, buzz, bzzz, zzz' and 'ji-ji-ji', ジー-ジー-ジー, bzzt, zzzt, fzzt' were listed. The use of buzz or any variant in technical English would be ludicrous. Why then, were these included? It seems that in colloquial Japanese, onomatopoeia is very productive and expressive. Certainly in colloquial English, an engineer might say that the generator made a buzzing noise before it began to burn up, but in a written report, he would not write 'buzzing.' Since this dictionary tends to use examples from technical literature and intends to promote standard usage within the field, it should label these English glosses as highly colloquial. Other examples include, 'sala sala', サラサラ, frou-frou (a new one for this native English speaker), swish-swish, scratch-scratch' and 'zabun', サブーン, splash, splosh.' Some formula for colloquial English might be mentioned, such as 'the machine made a \_\_\_\_\_ -ing noise' or 'the machine went \_\_\_\_\_.' The note should caution against using these expressions in written reports and formal speaking situations. Without such a note, such expressions could find their way into the Japanese engineers' technical reports.

Included within this section on semantic and lexical choice error is article usage, a constant problem for the Japanese. A typical problem is illustrated by, 'samostato', サモスタット, thermostat, Direct-acting thermostat makes use of the fact that nearly all liquids expand on heating,' which is missing an initial 'the.' However, in technical writing conventions in English, the article is sometimes dropped, as exemplified by, 'shiken', 試験, test, In one test, for example, bearing life was measured at an operating temperature of 150 F. In this case, 'bearing life' is correctly written without an article. Another problem confusing the issue is the plural, as in, 'toritsukeru', 取り付ける, be attached, The cards are then attached to modular chassis to form the completed equipment.' Since 'chassis' has the same form for the plural, the proofreader may have to stop for a minute to look it up in an English dictionary to confirm that it does not take an article. Then when confronted with, 'toritsukeru' (the following gloss), be mounted, The integrated circuits are mounted in sockets and relay can also be taken away,' the proofreader may pause for a moment before pondering over and finally inserting an article before 'relay.' Which article to insert is a separate problem made especially difficult by the extensive use of example sentences out of context.

### Syntactic

The next section of major errors is syntactic, concentrating on subordination and coordination, pronoun reference, and prepositions. For errors of coordination, we have several prescriptively incorrect examples, the first of which is archetypal, 'san', 酸, acid, There are many acids in food, and they are necessary for good health,' which is termed a comma splice.

Another type is illustrated by 'shikashi, しかし', but, 'The powerful telescopes of recent years have revealed these facts to us, but scarcely less wonderful is it that the mind of the great philosopher conceived this amazing idea of the universe 200 years ago.' This inclusion of the object pronoun, 'it,' is fairly common in the English of Japanese even at an advanced level. A third type of coordination indicating result is also subject to error. In this example, 'shikai, 視界', view, 'As the power of the telescope is increased, so more and more of the realms of space are brought within our view,' the incorrect usage of 'so' is illustrated.

As for subordination error, a few examples were found, one of which repeats the error of including 'so' to indicate result. 'Toritsukeru', be mounted, 'The primary radar controls are mounted on the aircraft's throttle so allowing the pilot to keep his head up during combat.' Substituting a comma for 'so' will correct the error. A second subordination error is related to an archaic form which probably has never been used in twentieth century technical writing. It is exemplified by 'aida, 間', whilst, 'Make the adjustment whilst the windlass is working.' Very few examples of verb tense error were found in the galley proof. The following error was in the tense of the modals, 'sabiru, 錆びる', rust (away), 'Both radioactive iron and nonradioactive iron could be alloyed into shiny stainless steel, or they would rust away if exposed to the weather. Perhaps inserting 'if...not alloyed...they will rust' would solve this problem.

A second type of syntactic error concerns pronoun reference, although some of the examples are only incorrect by the tenets of prescriptivist usage rather than by universal rules. The confusion caused by the ambiguous referent is the most common difficulty, as in 'sansei, 賛成', support, 'The administration has not supported legislation which would broaden significantly the role of NASA, making it responsible for a broad range of technical problems.' The pronoun, 'it' may here refer to administration, legislation, the role, or NASA. Another example is, 'sabiru', rust (away), (next example) 'An iron blade was found in one of the pyramids, but archaeological research is complicated by the fact that few parts of iron and steel survive the centuries because they rust away.' In this case, 'they' may refer to iron and steel, parts, centuries, or even pyramids. Replacing the offending pronoun with the intended noun will correct this problem. For the proofreader separated from the original source literature, this occasionally presents a problem. An example of a violation of a prescriptive rule is illustrated by, 'samazama na, サマシマナ', different, 'You are constantly handling and reading books of different kinds - schoolbooks, library books, dictionaries, and storybooks.' In this sentence, the use of 'you' should be reserved for colloquial English. Since this dictionary consistently uses examples from technical journals and books, the pronoun above could be replaced by a noun, such as 'students.'

The final section of syntactic problems concerns prepositions, which have been placed in this section on syntax because in Japanese these are postpositions. Of course, the semantic differences are another source of the problems that will be illustrated. Omission is a common problem, as illustrated by, 'sansei, 賛成', agree, 'The nations have informally agreed that the general budget will increase at a rate one percentage point.' In this sentence, 'of' is omitted. A problem which combines prepositions with semantics is the following, 'aidolingu, アイドリング', idling, 'To warm up the engine in a cold morning, idling time for several minutes is necessary.' Here we note two difficulties, the first with 'in' and the second with 'time for' which is not as obvious a mistake. 'An idling time of several minutes' or 'idling for several minutes' would correct the multiple duration of time in idling, time, for, and minutes in the main clause. A few cases of

indecision caused by the proofreaders' lack of familiarity with the content of the glosses were found. The most readable of these was, 'shien, 支援, support, The U.S. defense secretary voiced support to the Japanese program for strengthening capability in anti-submarine warfare.' In this, 'support for' was thought to be the more idiomatic and natural English. In other, more technical examples, such a decision was comparatively more difficult to make.

### Morphological

The third major section is concerned with morphological errors, in this dictionary galley proof exemplified by plural and possessive errors. The plural, like the article, is a constant source of error for the Japanese. Similar to the omission of the article, the most common error for plural usage is omission. Exemplifying this is, 'sansei, 賛成, in favor of, Two prominent figure in engineering and science have spoken in favor of establishing a council of engineering and scientific advisors,' and 'sankoo, 参考, reference, Reassemble the cylinder, using the exploded view and assembly views as reference." In this example, 'exploded view' might or might not be an error. Some of the proofreaders became overly cautious after four or five consecutive pages of plural errors, and this caution slowed them down. Technical writing conventions complicated this considerably. For example, a new term might not differ in its plural form, but unlike 'chassis' above, no dictionary or word list was available which was sufficiently updated to determine the correct form. An example of this is, 'sandoichi, サンドイッチ, sandwich, The RCS housing is of aluminum sheet metal construction, including flat outer skins, and the curved outer skin panels are graphite/epoxy honeycomb sandwich.' Whether 'sandwich' should be pluralized or not is moot. Occasionally, an English loan word or phrase created a plural error, as in, 'kyoryoku suru, 努力力す, make effort, It is necessary to make constant efforts to improve existing technology and to develop total system technology in such areas as atomic-powered steelmaking and direct-process steelmaking.' In technical fields in Japan, 'total system technology' has been borrowed from English and, following Japanese usage, is not pluralized. In the example, it might be left in the singular if it were not for the following phrase mentioning two types of steelmaking. A final type of plural error originates from the overuse of the plural, which is comparatively rare. The example is as follows, 'kyoryoku suru, make effort (the next example), Therefore Japanese understand the problems of the foreigner and will make every effort to understand him even if he makes a mistakes.' A sentence like this can arouse sympathy at times!

In addition to the morphological errors of plural usage, the possessive accounted for similar errors, mainly of omission. Either the apostrophe or the 's' or both were omitted. A single example should suffice; 'toritsukeru, are mounted, The primary radar controls are mounted on the aircrafts throttle.' In this, 'aircrafts' should have an apostrophe.

### Phonological

On the phonological level, a few spelling errors were caused by sounds which have caused confusion among the Japanese students of English, notably 'r' and 'l.' An illustration of this in a gloss is, 'torikomu, 取りこみ, entrap, In practice, the materials made plastic by an extruder screw are entrapped in a mold.' However, after reviewing the eleven 'r's' and 'l's' in this example, one feels that the writer should be applauded for getting so many correct. Other spelling errors were made by the printer and, in general, were easily corrected by the English speaking

proofreaders. A few inevitably caused difficulties, as with, 'au, , fit. In such a manner, the dector system may be designed closely to fit a V-shaped or U-shaped conveyor system or....' Since 'dector' was unknown to the proofreader, referral to a Japanese-reading editor was necessary. The Japanese translation following the English gloss contained 'detector,' so that other variants such as vector, sector, and injector could be discarded as choices. A more typical printer's error was, 'ailetto, アイレット', eyelet. In the latter method, the mounting plates are attached to the tube sockets which, in turn, are eyelefed to the main chassis.' Errors such as this misprinting of 't' as 'f' were readily corrected.

### Vygotskyan regulation

In the introduction, it was mentioned that the dictionary user often settles for the lowest level of control over his language, object-regulation, with a poorly translated result. This is because the words themselves are taken as objects from the dictionary, rather than as communicative ideas and concepts that can be manipulated and reinterpreted according to the user's needs. Successful users will strive to achieve self-regulation without giving up any accuracy in the translation. Their definition searching strategies must include the reading of all of the glosses and example sentences of a headword, while the less skillful user may just select the first gloss after the head word or the first gloss that has a word in it that is similar to a word he has in his original sentence. This was the source of the error regarding 'fit' rather than 'be suited to' in the chemical engineer's incorrect translation in the introduction, since he chose 'fit' because the example sentence contained the phrase, 'existing operating conditions.'

An example of object-regulation resulting in an inaccurate translation could easily occur from this dictionary's definition of *toritsukeru*. It is 'be mounted' followed by several sentences, all in the passive. If the technical writer is translating a manual composed largely of instructions and commands, he might, if unfamiliar with various uses of 'mount,' choose 'be mounted' in an instruction. Such use might occasionally be accurate, as in, 'after tightening the nuts, the control panel is mounted on the supports.' However, in commands, its use would be incorrect, as in, 'be mounted the control panel on the supports.' This unknowing use of the wrong form is an example of object-regulation in the Vygotskyan sense; in other words the Japanese translator's English sentence is totally dependent on (and totally at the mercy of) the words themselves which happen to appear under the Japanese head word he wishes to translate. An example of object-regulation working in the translator's favor would be when the headword is translated by a single English gloss, thus allowing no room for error, as in *ailetto*, defined only as eyelet, above.

### Definition of situation

The definition of situation, developed into the concept of the zone of proximal development by Wertsch (1984, 1985a) is a second useful concept to apply to the field of bilingual lexicography. The definition of situation is the mutual recognition and understanding of a communicative need and its 'context of situation' in Firth's (1957) sense. Given their technical and largely mathematics-oriented training, the potential users of this dictionary, engineers, scientists, and technicians, will have common educational backgrounds that the editors can rely on when they order the glosses and choose the example sentences. Unfortunately, when choosing these examples, the editors cannot take into account all of the individual backgrounds, which contributed

to the chemical engineer's translation difficulties above. This dictionary includes examples largely from electrical and mechanical engineering since the general editor was an electrical engineer and his students have been either electrical or mechanical engineers, which might be a cause for some problems according to the Vygotskian concept of definition of situation.

An example of a sentence selection by the editor which would probably not rely on the users' definition of situation is the gloss above of *aida* with 'whilst, Make the adjustment whilst the windlass is working,' which is archaic and outside the experience of any Japanese engineer with little or no sailing experience. Similarly, for *toritsukeru*, exemplified by, 'are mounted, The primary radar controls are mounted on the aircraft's throttle,' those engineers unfamiliar with 'throttle' may have to look it up, and if other uninterpretable words define throttle, they may give up on this very common use of 'mount' in the passive. Other incorrect uses of technical English deriving from this difficulty in finding the correct usage in the bilingual dictionary are widespread and are very familiar to ESL and EFL instructors around the world. Correct uses based on successful definition-finding strategies are comparatively more difficult to specify since these users also tend to be more sophisticated in their global knowledge of the English language; thus pinpointing the correct use of a word only to a dictionary search may be too confining and unrealistic. The various manifestations deriving from contrasting definitions of situation have been noted in several articles noting the impact of culture on the accuracy of the glosses, among them, Martin (1962), McCreary (1986), Mufwene (1986), Nguyen (1980), and Ogasawara (1984).

#### Intersubjectivity

Intersubjectivity, upon which the concept of definition is based, is explained and applied in several works by Ragnar Rommetveit (1974, 1981, 1985). Intersubjectivity can be utilized and abused by dictionary editors when eliding or trimming portions of the example sentences. This can have negative consequences depending on the depth of knowledge the user has with the field from which the sentence comes. This was illustrated in the section on semantic difficulties with, '*ni tsuide*, successively, With this device, sets of large color plates carrying multiple images may be made..., when the colors are printed successively, one over the other.' This trimming could cause the user to misinterpret 'successively' as a term which indicates 'many layers on top of each other,' or several other possible misinterpretations. Regarding intersubjectivity, the level of mutual communication between the sentence's author and the editor who chose this example sentence and trimmed it and all of the potential users for the life of this dictionary seems to this writer to be fairly low. A more familiar and untrimmed sentence would heighten the level of intersubjectivity.

#### Vygotskian shift

A fourth Vygotskian concept, a shift from the interpsychological plane to the intrapsychological plane when the dictionary user seeks definitions, is abstracted from Vygotsky's theory of child language development, in which he states that the child is at first a social being with interpsychological social speech which later develops into private speech, intrapsychological thought (Vygotsky, 1986). Since bilingual dictionaries and their objectives reflect language use as a social derivative, Vygotsky's ideas on this psychological speech shift may be explanatory for the psycholinguistic mechanism by which a bilingual dictionary user searches for and finds the lexical item(s) he needs. The unskilled user can easily approach the dictionary as an interlocutor-assistant

which will supply him with the words he needs to translate. However, the typical bilingual dictionary in Japan is often no more than a glossary, and the technical and scientific dictionaries are certainly nothing more than glossaries. This economical, but educationally unsound tendency, was criticized by Samuel Martin twenty-five years ago: 'the uncritical heaping up of near-synonyms is simply an evasion of responsibility on the part of the dictionary-maker: unable or too little informed to make up his own mind, he shifts the burden of choice to the user of the dictionary' (Martin, 1962:156). With this tendency, the intrapsychological shift becomes relatively difficult since no clues are given as to which word fits the user's thought best. The resulting frustration and *shikata ga nai*, 'helpless,' feeling, can prevent many Japanese users from making English words their own.

The user is then faced with a task that is much larger than he realizes. According to the Vygotskyan concept of shift, the user would then be unable to make the shift to the intrapsychological plane to make the word his own. The *Japanese-English Scientific and Technical Dictionary* on which the author worked has included glosses ordered by frequency of use in technical literature and has at least one sentence, usually a complete sentence, exemplifying each gloss. The intent by the general editor was to make the job of translation as easy as possible for the user. In more theoretical terms, if the user has more lexical options at hand and more examples to increase the chance of intersubjectivity and a shared definition of situation, the greater the likelihood that a shift to the intrapsychological plane of communication can take place.

### Conclusion

In this Japanese to English 'active' dictionary, the intent was to provide the skilled user with many examples of usage from published scientific and engineering literature in order to give them an opportunity to generate translations of their reports and articles in Japanese readily without recourse to a native speaker of English for editing. This is the practical result of Ščerba's concept of an 'active' dictionary. More than 30,000 examples have been included in this dictionary, which is a substantial improvement over the existing specialty dictionaries in print in Japan. Since Japanese translators use the dictionaries' example sentences as models for their writing, this large number is central to the importance of this new dictionary. Although a range of errors, from major semantic errors to minor misprints, have been pointed out, this author had to closely read more than two-hundred-fifty pages in order to find this variety and number of errors. This major work has been completed and, compared to the usefulness of the technical glossaries and engineering word lists that have preceded it, should be very successful in its endeavor to improve the state of Japanese to English translation. This particular type and direction of communication, from Japan to the English-speaking world, is now recognized to be of great importance economically. In the future, this trans-Pacific communication will be recognized for its importance, not only in economics, but also in the fields of education, politics, science, and technology.

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